

SEQUENCE LISTING

<110> Michael, T. Migawa
Walter F. Lima
Eric E. Swayze
Joshua Nichols
Hongjiang Wu
Thazha P. Prakash
Tadeusz Krzysztof Wyrzykiewicz
Balkrishen Bhat
Stanley T. Crooke

<120> COMPOSITIONS AND METHODS FOR OPTIMIZING
CLEAVAGE OF RNA BY RNASE H

<130> CORE0037USA

<150> PCT/US2005/008428

<151> 2005-03-15

<150> 60/609,516

<151> 2004-09-13

<150> 60/567,016

<151> 2004-04-29

<150> 60/553,646

<151> 2004-03-15

<160> 48

<170> FastSEQ for windows Version 4.0

<210> 1

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 1

ctacgctttc cacgcacagt

20

<210> 2

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 2

agtttaggtc tccgatcgtc

20

<210> 3

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 3
ctgctagcct ctggatttga

20

<210> 4
<211> 2160
<212> DNA
<213> Mus musculus

<400> 4
ggcgccctgc tctcccggcg gggcgggcga gggggcgggc tggccggcgc acggtgatgt 60
ggcgggactc tttgtgcaact ggcgcaggat acgcgcttgg gcgtcgggac gcggctgcgc 120
tcagctctct cctctcggaa gctgcagcca tgatggaagt ttgagagttg agccgctgtg 180
aggccaggcc cggcgaggc gagggagatg agagacggcg gcggccacgg ccagagagccc 240
ctctcagcgc ctgtgagcag ccgcgggggc agcgccctcg gggagccggc cggcgggcgg 300
cggcggcagc ggcggcgggc ctgcctcct cgtcgtctgt tctaaccggg cagcttctga 360
gcagcttcgg agagagacgg tggaagaagc cgtgggctcg agcgggagcc ggcgcaggct 420
cggcggtcgc acctcccgt cctggagcgg gggggagaag cggcgggcgg gcggcggtct 480
ccggggaggg ggtcggagtc gcctgtcacc attgccaggg ctgggaacgc cggagagttg 540
ctctctcccc ttctcctgcc tccaacacgg cggcgggcgg gcggcgacgt ccagggaccc 600
gggcccgtgt taagcctccc gtccgcgcgc gccgcacccc ccctggcccg ggctccggag 660
gccgcccggg gaggcagccg ctgcgaggat tatcgcctct ctccccattc cgctgcctcg 720
gctgccaggc ctctggctgc tgaggagaag caggcccagt ctctgcaacc atccagcagc 780
cgccgcagca gccattaccc ggctgcggct caggggccaag cggcagcaga gcgaggggca 840
tcagcgaccg ccaagtccag agccatttcc atctgcaga agaagcctcg ccaccagcag 900
cttctgccat ctctctcctc ctttttcttc agccacaggc tcccagacat gacagccatc 960
atcaaagaga tcgttagcag aaacaaaagg agatatcaag aggatggatt cgacttagac 1020
ttgacctata ttatccaaa tattattgct atgggatttc ctgcagaaag acttgaagg 1080
gtatacagga acaatattga tgatgtagta aggttttttg attcaaagca taaaaaccat 1140
tacaagatat acaatctatg tgctgagaga cattatgaca ccgcaaatt taactgcaga 1200
gttgacagat atctttttga agaccataac ccaccacgc tagaacttat caaaccttc 1260
tgtgaagatc ttgaccaatg gctaagtga gatgacaatc atgttgagc aattcactgt 1320
aaagctggaa agggacggac tgggtgtaatg atttgtgcat atttattgca tcggggcaaa 1380
tttttaaagg cacaagaggc cctagatttt tatggggaag taaggaccag agacaaaaag 1440
ggagtcacaa ttcccagtc gaggcgctat gtatattatt atagctacct gctaaaaaat 1500
cacctggatt acagacccgt ggcactgctg tttcacaaga tgatgtttga aactattcca 1560
atgttcagtg gcggaacttg caatcctcag tttgtggtct gccagctaaa ggtgaagata 1620
tattctctca attcaggacc cagcgggcgg gaggacaagt tcatgtactt tgagttccct 1680
cagccattgc ctgtgtgtgg tgatatcaaa gtagagttct tccacaaaca gaacaagatg 1740
ctcaaaaagg acaaaatgtt tcaatttttg gtaaatatcg tcttcatacc aggaccagag 1800
gaaacctcag aaaaagtgg aaatggaagt ctttgtgatc aggaaatcga tagcatttgc 1860
agtatagagc gtgcagataa tgacaaggag tatcttgtac tcaccctaac aaaaaacgat 1920
cttgacaaag caaacaaga caaggccaac cgatacttct ctccaaattt taagggtgaa 1980
ctatacttta caaaaacagt agaggagcca tcaaatccag aggctagcag ttcaacttct 2040
gtgactccag atgttagtga caatgaacct gatcattata gatattctga caccactgac 2100
tctgatccag agaatgaacc ttttgatgaa gatcagcatt cacaattac aaaagtctga 2160

<210> 5
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic oligonucleotide

<400> 5
atgacaatca tgggtcagca attc

24

<210> 6
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic oligonucleotide

<400> 6
 cgatgcaata aatatgcaca aatca 25
 <210> 7
 <211> 28
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Synthetic oligonucleotide
 <400> 7
 ctgtaaagct ggaaaggac ggactggt 28
 <210> 8
 <211> 20
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Synthetic oligonucleotide
 <400> 8
 ccttcctga aggttcctcc 20
 <210> 9
 <400> 9
 000
 <210> 10
 <211> 12
 <212> RNA
 <213> Artificial Sequence
 <220>
 <223> Synthetic oligonucleotide
 <400> 10
 cgcgauucg cg 12
 <210> 11
 <211> 12
 <212> RNA
 <213> Artificial Sequence
 <220>
 <223> Synthetic oligonucleotide
 <400> 11
 gcgcuaagc gc 12
 <210> 12
 <211> 19
 <212> RNA
 <213> Artificial Sequence
 <220>
 <223> Synthetic oligonucleotide
 <400> 12
 cgagaggcgg acgggaccg 19
 <210> 13
 <211> 21
 <212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 1-19

<223> Bases at these positions are RNA

<400> 13

cgagaggcgg acgggaccgt t

21

<210> 14

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 14,
16, 18, 19

<223> Bases at these positions are RNA

<400> 14

cgggtcccgtc cgcctctcgt t

21

<210> 15

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 4

<223> N = tetrafluoroindole

<400> 15

ctgntagcct ctggatttga

20

<210> 16

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 5

<223> N = tetrafluoroindole

<400> 16

ctgcnagcct ctggatttga

20

<210> 17

<211> 20

<212> DNA

<213> Artificial Sequence

```

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 6
<223> N = tetrafluoroindole

<400> 17
ctgctngcct ctggatttga                                20

<210> 18
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 7
<223> N = tetrafluoroindole

<400> 18
ctgctancct ctggatttga                                20

<210> 19
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 8
<223> N = tetrafluoroindole

<400> 19
ctgctagnct ctggatttga                                20

<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 10
<223> N = tetrafluoroindole

<400> 20
ctgctagccn ctggatttga                                20

<210> 21
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

```

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 5

<223> N = N-3-methyl-2'MOE-thymidine

<400> 21

ctgcnagcct ctggatttga

20

<210> 22

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 17

<223> N = tetrafluoroindole

<400> 22

ctgctagcct ctggatntga

20

<210> 23

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 16

<223> N = tetrafluoroindole

<400> 23

ctgctagcct ctgganttga

20

<210> 24

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<220>

<221> misc_feature

<222> 15

<223> N = tetrafluoroindole

<400> 24

ctgctagcct ctggntttga

20

<210> 25

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

```

<220>
<221> misc_feature
<222> 14
<223> N = tetrafluoroindole

<400> 25
ctgctagcct ctgnatttga                                20

<210> 26
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 13
<223> N = tetrafluoroindole

<400> 26
ctgctagcct ctngatttga                                20

<210> 27
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 5, 15
<223> N = tetrafluoroindole

<400> 27
ctgcnagcct ctggntttga                                20

<210> 28
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 16
<223> N = N-3-methyl-2'MOE-thymidine

<400> 28
ctgctagcct ctgganttga                                20

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature

```

<222> 7
 <223> N = 2'-ara-fluorothymidine or pseudouridine or
 2'-fluorothymidine or 2-thiouridine or
 2'-S-methylthymidine or 4'-methylthymidine or
 3'-methylthymidine

<400> 29
 ctacgcnttc cacgcacagt 20

<210> 30
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide

<220>
 <221> misc_feature
 <222> 8
 <223> 2'-ara-fluorothymidine or pseudouridine or
 2'-fluorothymidine or 2-thiouridine or
 2'-S-methylthymidine or 4'-methylthymidine or
 3'-methylthymidine

<400> 30
 ctacgctntc cacgcacagt 20

<210> 31
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide

<220>
 <221> misc_feature
 <222> 9
 <223> 2'-ara-fluorothymidine or pseudouridine or
 2'-fluorothymidine or 2-thiouridine or
 2'-S-methylthymidine or 4'-methylthymidine or
 3'-methylthymidine or abasic nucleotide or 2,4-F-tolyl

<400> 31
 ctacgcttnc cacgcacagt 20

<210> 32
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide

<220>
 <221> misc_feature
 <222> 10
 <223> 2'-ara-fluorocytidine or abasic nucleotide or
 2,4-F-tolyl

<400> 32
 ctacgcttnn cacgcacagt 20

<210> 33
 <211> 20

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 11
 <223> abasic nucleotide or 2,4-F-toyl

 <400> 33
 ctacgctttc nacgcacagt 20

 <210> 34
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 12
 <223> adenine with propyl linker or adenine with butyl
 linker or adenine with pentyl linker or
 tetrahydrofuran or 4-Me-ben

 <400> 34
 ctacgctttc cncgcacagt 20

 <210> 35
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 13
 <223> 2'-ara-fluorocytidine

 <400> 35
 ctacgctttc cangcacagt 20

 <210> 36
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 14
 <223> guanine with propyl linker or tetrahydrofuran or
 gancyclovir

 <400> 36
 ctacgctttc cacncacagt 20

 <210> 37

<211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 15
 <223> 2'-ara-fluorocytidine or cytidine with propyl
 linker or cytidine with butyl linker or cytidine
 with pentyl linker

 <400> 37
 ctacgctttc cacgnacagt 20

 <210> 38
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 4
 <223> N= Tetraflouroindole

 <400> 38
 agtntaggtc tccgatcgtc 20

 <210> 39
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 5
 <223> N= Tetraflouroindole or N=
 2,3,4,5-tetraflourophenyl

 <400> 39
 agttnaggtc tccgatcgtc 20

 <210> 40
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide

 <220>
 <221> misc_feature
 <222> 6
 <223> N= Tetraflouroindole or N=
 2,3,4,5-tetraflourophenyl

 <400> 40
 agtttnggtc tccgatcgtc 20

```

<210> 41
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 7
<223> N= Tetraflouroindole

<400> 41
agtttangtc tccgatcgtc                                     20

<210> 42
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> 8
<223> N= Tetraflouroindole

<400> 42
agtttagntc tccgatcgtc                                     20

<210> 43
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 13
<223> N= Tetraflouroindole

<400> 43
agtttaggtc tcngatcgtc                                     20

<210> 44
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 14
<223> N= Tetraflouroindole

<400> 44
agtttaggtc tccnatcgtc                                     20

<210> 45

```

```

<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 15
<223> N= Tetraflouroindole

<400> 45
agtttaggtc tccgntcgtc                                     20

<210> 46
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 16
<223> N= Tetraflouroindole

<400> 46
agtttaggtc tccgancgtc                                     20

<210> 47
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 17
<223> N= Tetraflouroindole

<400> 47
agtttaggtc tccgatngtc                                     20

<210> 48
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<220>
<221> misc_feature
<222> 6, 16
<223> N= Tetraflouroindole

<400> 48
agtttnggtc tccgancgtc                                     20

```